What is claimed is :

1. Laser amplifying system comprising a plate-like solid-state body (10) having two oppositely located flat sides (12, 14) and comprising a laser active medium, a cooling member (40) with a support surface (42) arranged so as to face one of the flat sides (14) of the solid-state body (10), said flat side (14) being thermally coupled to said support surface for the discharge of heat,
characterized in that the flat side (14) of the solid-state body (10) is coupled mechanically and thermally to the support surface (42) by an adhesive layer (44, 44', 44"') produced from an adhesive material passing essentially invariant in volume from a liquid state into a solid, cross-linked state and that the adhesive layer (44, 44', 44"') has an active adhesive layer area (46) with a heat resistance of less than 10 K x mm^2/W.

2. Laser amplifying system as defined in claim 1, characterized in that the heat resistance of the active adhesive layer area (46) is less than 5 K x mm^2/W.

3. Laser amplifying system as defined in any one of the preceding claims, characterized in that the active adhesive layer area (46) is at least that area of the adhesive layer (44, 44', 44") bordering on a volume area (23) of the solid-state body (10) having a pumping power density of the pumping light radiation field (20) of approximately 80 % of the maximum value and more present in it.

4. Laser amplifying system as defined in any one of the preceding claims, characterized in that the active adhesive layer area (46) is at least that area of the adhesive layer (44, 44', 44") bordering on the volume area (22) of the solid-state body (10) penetrated by the pumping light radiation field (20).

5. Laser amplifying system as defined in any one of the preceding claims, characterized in that the active adhesive layer area (46) is at least that area of the adhesive layer (44, 44', 44") bordering on the volume area (23) of the solid-state body (10) penetrated by at least two intersecting pumping light radiation fields (20a, 20b).

6. Laser amplifying system as defined in any one of the preceding claims, characterized in that the adhesive layer (44, 44', 44"') has a tensile strength of more than 1 N/mm^2.

7. Laser amplifying system as defined in claim 6, characterized in that the adhesive layer (44, 44', 44"') has a tensile strength of more than 5 N/mm^2.

8. Laser amplifying system as defined in any one of the preceding claims, characterized in that the adhesive layer (44, 44', 44"') has a shearing strength of more than 5 N/mm^2.

9. Laser amplifying system as defined in claim 8, characterized in that the adhesive layer (44, 44', 44"') has a shearing strength of more than 25 N/mm^2.

10. Laser amplifying system as defined in any one of the preceding claims, characterized in that the adhesive layer (44, 44', 44"') is essentially thermally invariant in shape in the solid, cross-linked state.

11. Laser amplifying system as defined in any one of the preceding claims, characterized in that the adhesive is a two-component adhesive.

12. Laser amplifying system as defined in any one of the preceding claims, characterized in that the adhesive passes from the liquid state into the solid, cross-linked state without any transfer of substances.

13. Laser amplifying system as defined in any one of the preceding claims, characterized in that the adhesive is an adhesive hardening by way of a supply of energy by means of radiation.

14. Laser amplifying system as defined in claim 13, characterized in that the adhesive is hardened by way of radiation with light.

15. Laser amplifying system as defined in claim 14, characterized in that the adhesive is hardened by way of radiation with UV light.

16. Laser amplifying system as defined in any one of the preceding claims, characterized in that the adhesive has a viscosity of less than 1000 mPa x s in the non-cross-linked state.

17. Laser amplifying system as defined in any one of the preceding claims, characterized in that the adhesive layer (44, 44') is free from filler material.

18. Laser amplifying system as defined in any one of claims 1 to 17, characterized in that the adhesive layer (44"') has a filler material.

19. Laser amplifying system as defined in claim 18, characterized in that the filler material (52) has nanoparticles.

20. Laser amplifying system as defined in claim 18, characterized in that the filler material (52) has filler bodies with a size in the micrometer range.

21. Laser amplifying system as defined in claim 20, characterized in that the filler material has filler bodies (52) consisting of one or more of the substances boron nitride, diamond, silver, copper and/or gold.

22. Laser amplifying system as defined in any one of the preceding claims, characterized in that the adhesive layer area (46) bordering on the active volume area (36) has a thickness (D) of less than 5 μm.

23. Laser amplifying system as defined in claim 22, characterized in that the adhesive layer area (46) bordering on the active volume area (36) has a thickness (D) of less than 2 μm.

24. Laser amplifying system as defined in any one of claims 18 to 21, characterized in that the adhesive layer area (46) bordering on the active volume area (36) has a thickness of less than 50 μm.

25. Laser amplifying system as defined in any one of the preceding claims, characterized in that the adhesive layer (44, 44', 44"') is optically transparent.

26. Laser amplifying system as defined in any one of the preceding claims, characterized in that the adhesive layer (44) has an essentially constant thickness (D).

27. Laser amplifying system as defined in any one of the preceding claims, characterized in that the adhesive layer (44') has an increasing thickness (D) in a radial direction in relation to a center (26) of the active volume area (36) starting from a central adhesive layer area bordering on said center (26).

28. Laser amplifying system as defined in any one of the preceding claims, characterized in that the course of the thickness (D) of the adhesive layer (44') is essentially radial symmetric to the center (26) of the active volume area (36).

The present disclosure relates to the subject matter disclosed in German Application No. 100 38 006.9 of August 4, 2000, the entire specification of which is incorporated herein by reference.